

## Multiplying and Dividing Rational Expressions

Multiply or divide as indicated.

1.  $\frac{5y}{12x^2} \div \frac{5y^2}{8x^2}$  \_\_\_\_\_
2.  $\frac{7x^4}{24y^5} \div \frac{21x}{12y^4}$  \_\_\_\_\_
3.  $\frac{5y - 20}{3y + 15} \cdot \frac{7y + 35}{10y - 40}$  \_\_\_\_\_
4.  $\frac{3y + 3}{6y + 12} \cdot \frac{5y + 5}{18}$  \_\_\_\_\_
5.  $\frac{6x + 6y}{7} \div \frac{4x + 4y}{x - y}$  \_\_\_\_\_
6.  $\frac{3x^3}{x^2 - 25} \cdot \frac{x^2 + 6x + 5}{x^2}$  \_\_\_\_\_
7.  $\frac{y^2 - 2y}{y^2 + 7y - 18} \cdot \frac{y^2 - 81}{y^2 - 11y + 18}$  \_\_\_\_\_
8.  $\frac{x^2 - 5x + 4}{x^2 + 3x - 28} \cdot \frac{x^2 + 2x - 3}{x^2 + 10x + 21}$  \_\_\_\_\_
9.  $\frac{(y + 6)^2}{y^2 - 36} \cdot \frac{3y - 18}{2y + 12}$  \_\_\_\_\_
10.  $\frac{y^2 - 7y}{5y + 35} \cdot \frac{y^2 - 49}{(y - 7)^2}$  \_\_\_\_\_
11.  $\frac{6x^2 - 32x + 10}{3x^2 - 15x} \div \frac{3x^2 + 11x - 4}{2x^2 - 32}$  \_\_\_\_\_
12.  $\frac{x^2 - 3xy - 10y^2}{2x^2 - 11xy + 5y^2} \cdot \frac{2x^2 + 5xy - 3y^2}{x^2 + 5xy + 6y^2}$  \_\_\_\_\_

## Applications

13. **Aviation** A plane flew from one city to another a distance of  $\frac{x^2 + 4x + 4}{x + 4}$  mi. If it flew at an average rate of  $\frac{x^2 - 2x - 8}{x^2 - 16}$  mi/h, how long did the flight take?
- \_\_\_\_\_

## MIXED PRACTICE

Simplify.

14.  $\frac{x^2 - 3x}{x^2 - 9}$  \_\_\_\_\_
15.  $\frac{2y^2 - 98}{y^2 - y - 42}$  \_\_\_\_\_
16.  $\left(\frac{x^3y^{-1}}{xz^2}\right)^0 + \left(\frac{x^3}{z^2}\right)^0$  \_\_\_\_\_
17.  $\frac{5x^3z - 5x^2yz}{5x^2z}$  \_\_\_\_\_
18.  $\frac{7x^{-2}y^{-3} \cdot 2x^{-3}y^3}{7x^{-3}y}$  \_\_\_\_\_
19.  $(2x^{-3} \cdot y^{-1}z)^{-2}$  \_\_\_\_\_